



PRELIMINARY ENVIRONMENTAL ASSESSMENT

Bodangora Wind Farm (MP 10_0157)

For Infigen Energy Development Pty Ltd



Prepared by

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October 2010

Contents

APPENDICES	3
1.0 INTRODUCTION	1
1.1 Purpose	1
1.2 Project Overview	1
1.3 Proponent Details	2
1.4 Project Timeframe	3
1.5 Project Contractor	4
1.6 Key Stakeholders	4
2.0 PROJECT DESCRIPTION	5
2.1 Wind Turbine Details	5
2.2 Electrical Substation and Grid Connections	6
2.3 Access	7
2.3.1 Construction	7
2.3.2 Operation	7
2.4 Removal of Native Vegetation	7
2.5 Materials	8
2.6 Construction	8
2.7 Decommissioning	8
3.0 CONTEXT	10
3.1 Environmental Context	10
3.2 Wind Energy Context	13
4.0 STATUTORY ASSESSMENT REQUIREMENTS	14
4.1 National Instruments	14

Contents Continued

4.1.1	Commonwealth Environmental Protection and Biodiversity Conservation Act 1999	14
4.1.2	National Parks and Wildlife Act 1974	14
4.1.3	Civil Aviation Act 1988	14
4.2	NSW Instruments	14
4.2.1	Environmental and Planning Assessment Act (EP&A Act) 1979	14
4.2.2	Threatened Species Conservation Act 1995	15
4.2.3	Water Management Act 2000	15
4.2.4	State Environmental Planning Policy	15
4.2.5	Roads Act 1993	15
4.3	Local Instruments	16
4.3.1	Wellington Local Environmental Plan 1995	16
5.0	KEY ENVIRONMENTAL ISSUES AND PROPOSED INVESTIGATIONS	19
5.1	Telecommunications	19
5.2	Land Use	19
5.3	Flora and Fauna	20
5.4	Heritage	21
5.5	Visual/Landscape	22
5.6	Shadow Flicker	22
5.7	Blade Glint	23
5.8	Noise	23
5.9	Aircraft Safety	24
5.10	Geology	24
5.11	Water Supply and Site Drainage	25
5.12	Traffic and Transport Assessment	25

Contents Continued

5.13	Bush Fire	26
6.0	CONSULTATION	27
6.1	Land Owners	27
6.2	Preliminary Consultation Already Undertaken	27
6.3	Proposed Consultation Process	28
7.0	REFERENCES	30

APPENDICES

Appendix A	Director General's Classification as Part 3A Major Project
Appendix B	Site Locality
Appendix C	Turbine Envelope
Appendix D	Land Owners Map
Appendix E	Environment Protection and Biodiversity Conservation Act Database Search

1.0 INTRODUCTION

1.1 Purpose

MasterPlan SA Pty Ltd has prepared this Preliminary Environmental Assessment (PEA) on behalf of Infigen Energy Development Pty Ltd.

Confirmation has been received that the Bodangora Wind Farm is a project to which Part 3A of the *Environment Planning and Assessment Act 1979* applies. On 30 August 2010, the Director – Infrastructure Projects (as delegate for the Minister) formed the opinion that the proposal meets the requirements of Schedule 1, Group 8, Clause 24 of the *State Environmental Planning Policy (Major Development) 2005* (provided within **Appendix A**).

It is understood that this PEA will provide the initial project details for the Bodangora Wind Farm to the NSW Department of Planning, to allow the drafting of the *Director General's Requirements*. Following receipt of the *Director General's Requirements*, an Environmental Assessment (EA) will be prepared.

This document outlines a summary of the project details for the wind farm, including the following:

- a project overview of what is proposed, including a description of the proposed wind farm and its ancillary components, the site and locality of the wind farm, and timeframes for its development;
- planning and environmental legislative context in which the wind farm will be assessed;
- a preliminary assessment and outline of the key environmental issues and risks associated with the project; and
- an outline of the likely investigations to be undertaken to enable the proper assessment of the project.

1.2 Project Overview

The Bodangora Wind Farm is a medium scale project, which will ultimately involve the development of between 25 to 40 wind turbine generators. The project area is located entirely within the Wellington Council area, and is around 15 kilometres north-east of Wellington and around 40 kilometres south-east of Dubbo at the closest point.

The small regional settlement of Bodangora is located just over 2.0 kilometres from the wind farm site and comprises around 15 dwellings. The context of the wind farm in relation to this regional settlement will be analysed in detail through planning and environmental assessments. In addition, a number of rural properties are located both within, and around the wind farm site.

Appendix B identifies an outline of the site locality in context to Wellington.

The wind farm would have a total nameplate electrical capacity of 60-110 MW, with the expected electricity production to be around 230 GWh annually.

The wind farm either will be connected to the grid through the installation of a new switchyard connect to the existing 132kV transmission line between the Wellington substation and Beryl, or may connect directly into the existing Wellington substation. The final arrangements will depend largely on connections availability, and consultation with TransGrid as the owner and operator of both transmission lines. A series of underground or overhead 33kV electricity transmission lines will also be installed to connect each wind turbine.

An indicative turbine envelope has been provided in **Appendix C**. The design and placement of the wind towers and connections will be according to the findings of detailed environmental investigations, in particular on land use, flora and fauna and heritage investigations, property owners and dwelling locations, and on a detailed wind resource assessment.

1.3 **Proponent Details**

Infigen Energy own and operate over 2,100MW of wind energy generation globally, and are the leading specialist in wind and renewable energy development and operation in Australia. Infigen operate in the development, asset management, and energy market capabilities in Australia, and are the largest owner of wind energy capacity in Australia.

The proponent contact details for the project are as follows:

Project Manager: Frank Boland

Company [Infigen Energy Development Pty Ltd]

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Infigen have extensive experience in the development of wind farms, the portfolio of which includes those identified in Table 1.1.

Table 1.1: Proponent's other Australian wind farm projects

Project	State	Turbines	Total generation capacity	Status
Lake Bonney 1	SA	46 Vestas V66	80.5MW	Operational 2005
Lake Bonney 2	SA	53 Vestas V90	159.0MW	Operational 2008
Lake Bonney 3	SA	13 Vestas V90	39.0MW	Operational 2010

Project	State	Turbines	Total generation capacity	Status
Capital	NSW	67 Suzlon 2.1MW S88	140.7MW	Operational 2009
Alinta	WA	54 NEG Micon NM82	89.1MW	Operational 2006
Woodlawn	NSW	20 Suzlon 2.1MW S88	42.0MW	Under construction

Other wind farms which are in the pipeline include Flyers Creek, Glen Innes, Capital 2, Woodlawn 2 in NSW, Walkaway 2 and 3 in WA, Woakwine in SA, and Cherry Tree in VIC. Infigen Energy have also been shortlisted for the Australian Government Solar Flagships program, utilising solar photovoltaic energy.

1.4 Project Timeframe

Table 1.2 provides a likely outline of the Bodangora wind farm project timing.

Table 1.2

Phase	Duration	Approximate timing
Preliminary Environmental Assessment submitted		October 2010
Director General's assessment requirements issued	1 months	November 2010
Preliminary Turbine Layout Design and Environmental investigations prepared	5 months	April 2011
Public Exhibition of Draft Environmental Assessment Report	1 month	May 2011
Approval authority review and determination	4 months	June – September 2011
Wind farm construction and grid connection	12 months	Late 2011 – Late 2012
Commissioning	2-3 months	2012

1.5 Project Contractor

Infigen Energy will engage a contractor to supply the required equipment and to construct the Bodangora Wind Farm. The contract specification will address the proponent's 'Statement of Commitments' that will be submitted with the EA. If necessary, the Statement of Commitments will be amended to address any project approval conditions applicable in respect to the construction and operation phases of the development. Infigen Energy will work with the contractor to finalise design elements, complete planning and, subject to obtaining the necessary approvals, to progress the construction, commissioning and operation of the wind farm.

The wind farm equipment suppliers in Australia are familiar with construction environmental issues and have well developed environmental management systems. In selecting the project contractor, Infigen Energy will review the contractor's prior environmental performance and ensure that the contractor has an effective environmental management system that will ensure that the project's environmental commitments are achieved.

1.6 Key Stakeholders

The success of a wind farm project relates closely to the early engagement of key stakeholders to achieve a consultation process which is transparent, effective and thorough.

Key stakeholders to the Bodangora Wind Farm include:

- Infigen Energy Development Pty Ltd ("The Proponent")
- the land owners of the subject land ("The Owners");
- the Wellington Council ("The Council");
- the NSW Department of Planning ("DoP");
- other relevant State Government Agencies;
- the local community including rural neighbours;
- the local indigenous community; and
- TransGrid as owner and operator of the electrical infrastructure in the region.

A full list of the proposed stakeholders to be consulted, and a general outline of the consultative process is provided in Section 6.0.

2.0 PROJECT DESCRIPTION

The project will comprise of the following key elements, which are outlined within this section of the PEA:

- 25 to 40 wind turbines;
- underground and overhead electrical reticulation;
- up to three temporary and three permanent meteorological masts;
- gravel pit;
- concrete batching plant;
- temporary lay down area and construction site office;
- an operations and maintenance facility;
- electrical connections (including possibility of a new switchyard);
- new internal access roads and modifications to existing roads; and
- potential removal of native vegetation.

2.1 Wind Turbine Details

The wind farm will comprise of 25 to 40 wind turbines (turbine manufacturer to be confirmed at a later date). Each turbine will encompass the following:

- A likely tip height of 130 to 150 metres, comprising three blades of approximately 45 to 60 metres in length, and connected to the main structure of 80 to 100 metres in height (for the purposes of the environmental assessment, a maximum height of 150 metres at the highest point has been considered).
- The turbines to be located on the land at elevations of between 400 metres to 740 metres (Australian Height Datum).
- It is likely that all turbine footings will be constructed via a 'rock anchor' comprising drilling into the rock base for support. Concrete footings will be constructed to an approximate depth of 3.0 metres cubed for structural support of each turbine.
- Each wind turbine will have a nominal capacity of between 2 MW and 5MW with the total wind farm capacity being between 60 MW and 110 MW.
- The wind turbines will be automated to face into the wind and to start generating once sufficient wind speeds occur, typically above 4.0 meters per second (14 kilometres per hour). At wind speeds above approximately 25 metres per second (90 kilometres per hour), the turbines will automatically shut down to avoid damage to the equipment or unsafe operation.

- Each individual turbine will be connected electrically by 33kV cables to the point of connection to the grid (refer Section 2.2). Underground cables will be utilised wherever possible.
- A facilities building will be incorporated into the wind farm design.
- A public viewing platform may also be incorporated into the design.

A turbine envelope has been provided as an indication of the areas which are being considered for the development of turbines. Wind estimates to date have shown that the great majority of wind turbines are likely to be located at the higher elevations within the project site boundary. Large areas within the turbine envelope are likely to remain undisturbed by the project.

The final turbine layout will be subject to wind monitoring, and the findings of the proposed land use planning and environmental investigations as per Section 5.0 of this PEA. The final turbine layout will also be informed by specific environmental studies including, but not limited to cultural heritage, and flora and fauna investigations.

2.2 Electrical Substation and Grid Connections

Initial connection enquiries have been made with TransGrid, as the owner, operator and manager of the high-voltage transmission system in NSW for the connection of the wind farm to existing infrastructure in the region.

TransGrid have recently completed the construction of a 330kV transmission line between Wellington and Wollar, and an existing 132kV transmission line between Wellington and Beryl is located at the southern end of the site.

Depending on the arrangements made with TransGrid as the project scope develops, one of the following will be the likely arrangements depending on proximity and TransGrid's preferred outcome:

- the development of an electrical switchyard at the south-eastern part of the project area to enable connections to the existing 132 kV electrical line. The location of this switchyard has not yet been finalised and will be subject to electrical design and environmental review; or
- the connection of the wind farm to TransGrid's existing substation to the north of Wellington.

The majority of the wind turbines will be connected via a series of underground 33kV electrical cables, providing a connection back to the control room.

A consultant will be engaged for the purposes of designing the appropriate connections for the project. All connection infrastructure will be located entirely within the Wellington Council area.

2.3 Access

2.3.1 Construction

Access tracks

A number of new access tracks will need to be constructed to enable access to the wind turbines for the purposes of turbine construction and maintenance.

New access tracks will be provided to allow for the construction of wind turbines along the crest of the ridges. It is likely that those access tracks will connect a number of turbines to limit the length of new roadways needed. Oversize vehicles may be up to 50 metres in length in order to transport the turbine blades.

To allow for the transportation of those parts, the width of access tracks will need to be increased to approximately 9.0 metres to allow for the delivery of parts and materials to each of the turbine locations.

Local roads

Existing local roads within the wider locality are likely to be used for construction vehicles. Where necessary some sections of the local roads may be required to be upgraded to accommodate suitable construction vehicles.

As indicated for the access tracks, to allow for the transportation of wind turbine components and construction materials, the width of access tracks will need to be constructed approximately 9.0 metres wide to allow access to each of the turbine locations.

Modifications and the creation of local roads will be negotiated with the Wellington Council and the NSW Roads and Traffic Authority once wind turbine locations have been identified. All access tracks will be constructed to relevant engineering standards.

Regional roads

The selection of routes for transportation of wind turbine parts from the wider region will involve an assessment of the arrival shipping port, individual road design, road safety and the requirements of the NSW Roads and Traffic Authority.

2.3.2 Operation

Once construction is completed, access tracks will be reduced to a width of approximately 5.0 metres. Those areas of land no longer required for access will be appropriately remediated to the state they existed prior to construction commencing.

2.4 Removal of Native Vegetation

Wind monitoring and environmental investigations will enable the best possible placement for wind turbines, with the majority of turbines located on pastoral lands. It is likely that given the proposed road width for construction of 9.0 metres as indicated in Section 2.3, there is likely to be the need for some removal of existing native vegetation along access tracks corridors.

Where native vegetation clearance is unavoidable, approval will be sought under the *Native Vegetation Act 2003*.

A flora and fauna investigation is proposed as part of the EA investigations as identified in Section 5.3.

2.5 Materials

Local materials, including gravel and sand for the construction of roadways will be sourced wherever possible. Landowners and rural neighbours will be provided with the opportunity to provide materials in the first instance, to minimise the transport distance and maximise local investment.

Dust and erosion during construction will be suppressed by the spraying of water over exposed materials.

Concrete can be sourced from the local Boral concrete batching plant at Maryvale (to the north of Wellington). [Alternatively, a mobile batching plant may be established on-site.]

2.6 Construction

The construction phase of the wind farm development is likely to take around 12 months to complete and will consist of site preparation and road modifications (as identified in Section 2.3), the transportation of materials and equipment to the project area, and the construction of new access tracks to each of the wind turbine sites.

The erection of 25 to 40 wind turbines will also involve the placement of underground cabling, possibly a new switchyard, and above ground transmission lines to connect to existing infrastructure.

Technical staff will be required for the construction of the wind farm, together with general construction and labouring staff. Technical staff not locally resident to the area will require temporary accommodation in Wellington which will provide associated economic benefits for the town. Local employment for the construction of the wind farm will be sought where possible.

If possible, construction will dovetail the construction of Infigen's Flyers Creek Wind Farm (south of Orange). This will enable efficiencies in the provision of equipment and technical staff as equipment and technical staff can be transferred from one project location to the other.

Areas of land that don't involve permanent clearing of native vegetation will be rehabilitated wherever possible after construction is completed. This is likely to include construction lay down areas, widened access roads for construction, cable trenches etc.

2.7 Decommissioning

The wind turbines will be maintained as required until a decision has been made to decommission the wind farm. As previously indicated, the wind farm is likely to have a life expectancy of around 30 to 35 years. Following this period, a decision will be made to either:

- repower the turbines; or
- decommission the wind farm.

If decommissioning is undertaken, all above ground infrastructure from the site will be removed and the disturbed areas rehabilitated. Concrete pads which were originally constructed for structural support for the turbines will remain.

3.0 CONTEXT

3.1 Environmental Context

The proposed wind farm is to be located in the NSW Central Tablelands region, and is entirely within the Wellington Council Local Government Area. Bodangora is approximately 15 kilometres north-east of the township of Wellington, and 40 kilometres south-east of Dubbo (refer to **Appendix B** for a site locality plan).

The historic settlement at Bodangora occurred following the discovery of gold and the operation of a mine at Mitchell's Creek. Little remains of Bodangora, following the closure of the mine in 1908. Bodangora currently comprises around 14 dwellings and a town hall. Although the land is divided in small allotments, the Bodangora settlement remains within the Rural (1A) Zone of the Wellington Local Environmental Plan. A view of the main road through Bodangora is shown on **Figure 1**.



Figure 1: Bodangora settlement with town hall and a dwelling in the background.

The land covered by the wind farm is generally referred to the 'project area' within this document. It covers a distance of approximately 20 kilometres from east to west, and 10 kilometres from north to south. The site is at elevations between 400 metres Australian Height Datum (AHD) and 740 metres AHD.

The landscape of the site is generally cleared, undulating pastoral land and with occasional scattered areas of remnant vegetation. The area is characterised as an undulating to hilly landscape, although no obvious ridgeline occurs. **Figures 2 to 4** are typical of the landscape in the project area.

The highest point in the wider region is Mount Bodangora which is currently utilised for various telecommunications equipment. Land to the north and west of the site area is generally lower in elevation than the study area, and does not comprise of many topographical features.

The project site falls within the Central West Catchment Management Authority. Locally, a number of drainage lines run throughout the site, including Mitchell Creek, Spicers Creek, Uamby Creek and associated tributaries. Drainage is generally to the west of the site.



Figure 2: Typical landscape at project area.



Figure 3: Typical landscape at project area.



Figure 4: Typical landscape at project area.

As shown on **Appendix D**, there are a number of rural residences dispersed over the site. The location of each residence has been identified and confirmed using both desktop research and site inspections.

The Wellington airfield is located approximately 3.0 kilometres to the south and west of the site. This airfield is owned and operated by the Wellington Shire Council. It is not a listed airfield by the Civil Aviation Safety Authority, but operates around 20 planes a week for both private purposes and by the Department of Correctional Services. Also in the locality along the Goolma Road towards the Wellington township is the Wellington Correctional Services Centre (recently constructed). The Wellington Correctional Services Centre houses approximately 650 inmates.

Two transmission lines are located within immediate proximity of the turbine envelope areas; being the 132kV transmission line between Wellington and Beryl, and the 330kV transmission line between Wellington and Wollar. The boundary of the subject site covers an area of land inclusive of this to enable an electrical connection to the grid. A photograph of the 330kV transmission line through the project area is provided in **Figure 5**.



Figure 5: 330kV transmission line through project area.



Figure 6: Wellington substation.

The substation at Wellington (to the south-west of the project area and around 2.0 kilometres north-east of Wellington) began construction in 2008 to facilitate electricity transmission to the central west region of NSW. A photograph of the substation from close to the township of Wellington is provided in Figure 6. This substation offers an alternative connection point (refer to Section 2.2). All connection infrastructure will be entirely within the Wellington Council.

The final turbine locations are still to be determined, and will be subject to the results of the environmental investigations within the Environmental Assessment (particularly dwelling locations, flora and fauna and heritage), and also subject to wind monitoring results. The proponent expects to have sufficient wind modelling undertaken by February 2011 to enable detailed and site specific environmental investigations to be undertaken.

An 80 meteorological mast and SODAR (Sonic Detection and Ranging device) have been installed on the site for a period of around three months, and have largely confirmed the existence of a suitable wind resource. The SODAR will be transported to a variety of locations across the project site for comparison. Wind speeds at the project site generally range from 7.5m/s to 8.5m/s.

3.2 Wind Energy Context

The Australian Government's mandated Renewable Energy Target (RET) is a scheme which has been established to encourage additional generation of electricity from renewable energy sources to achieve a commitment of a 20 percent share of renewables in Australia's electricity supply by 2020. The RET places a legal liability on wholesale purchases of electricity (eg electricity retailers) to proportionally contribute to an additional 45,000 gigawatt hours (GWh) of renewable energy each year.

The steep 'ramp up' profile of the requirements of RET up to 2020 and the significant lead time which is required to complete renewable energy developments and construction, requires the commencement of new projects now.

The Cabinet Office of the Government of New South Wales released the NSW Greenhouse Plan in 2005. The Plan has acknowledged the occurrence of climate change and its potential effects and provides a target for reductions to greenhouse emissions of 60 percent by 2050; and cutting greenhouse emissions to year 2000 levels by 2025. Strategies to achieve these targets include raising community awareness, introducing climate change adaption measures, and setting the state of NSW on the path of sustainable development. Electricity generation is considered as a key contributor to the emissions of NSW as existing.

A clean energy future is identified as a key strategy in the actions in reducing greenhouse emissions. The proposed development is directly aligned with the NSW Greenhouse Plan and will provide a reliable, affordable and secure clean energy source for NSW.

There has been recent growth in wind energy developments across Australia, generally due to wind energy being a more cost effective utility scale technology (with least cost, and technology neutral incentives), especially in comparison to other renewables including solar and thermal energy (Department of Resources, Energy and Tourism, 2010).

4.0 STATUTORY ASSESSMENT REQUIREMENTS

4.1 National Instruments

4.1.1 Commonwealth Environmental Protection and Biodiversity Conservation Act 1999

Any matters of 'National Environmental Significance' as listed under the *Commonwealth Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) will need to be identified and an assessment undertaken by a qualified representative. A desktop search of the EPBC database has been undertaken and will form the base for more specific and targeted flora and fauna investigations (a copy of the desktop search has been provided in **Appendix E**).

Preliminary flora and fauna investigations are currently being undertaken through the spring/summer period of 2010/2011. The preliminary investigations will determine whether an EPBC referral is required in this instance.

If any activities will have, or are likely to have an impact on any matter of environmental significance, then approval is required under Part 9 of the EPBC Act. If a referral is required to be undertaken, then it will be identified as part of the Environmental Assessment process.

4.1.2 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* governs the establishment, management and preservation of parks, conservation areas, historic sites, and any endangered, rare or threatened species. Although the project site does not cover any national park or conservation areas, detailed flora and fauna investigations will enable assessment of the proposed development against the *National Parks and Wildlife Act* as part of the Preliminary Environmental Assessment.

4.1.3 Civil Aviation Act 1988

Any structures greater than 110 metres in Australian Height Datum must be made aware to the Civil Aviation Safety Authority (CASA) under the *Civil Aviation Act 1988*.

Existing contour heights for the project area have been provided in the graphics provided in **Appendix B**.

Detailed discussions will be undertaken with the CASA during the proposed consultation phase and in preparation of the Environmental Assessment.

4.2 NSW Instruments

4.2.1 Environmental and Planning Assessment Act (EP&A Act) 1979

The subject development is considered as a major development and a piece of critical infrastructure within Part 3A of the *Environmental and Planning Assessment Act 1979*. Part 3A applies to wind farm developments with a capital cost of \$30 million or greater, defining these projects as 'major'.

Consultation with the Department of Planning has occurred and the proponent has received correspondence from the Director, Infrastructure Projects (as delegate of the Minister of Planning) dated 30 August 2010, included in **Appendix A**.

It is understood that upon validation of this PEA, the Director General will issue requirements of the Environmental Assessment within 28 days. Accordingly, following receipt of the Director General's requirements, the necessary investigations will be undertaken and an Environmental Assessment on the proposed development will be prepared.

4.2.2 Threatened Species Conservation Act 1995

The *Threatened Species Conservation Act 1995* provides for the conservation of threatened species, populations and ecological communities. The flora and fauna investigation as part of the Environmental Assessment will identify if any targeted surveys will need to be undertaken with regards to this Act.

4.2.3 Water Management Act 2000

The *Water Management Act 2000* governs for the sustainable and integrated management of water resources in NSW. The determination of any licences required for the proposed development, will be considered within the EA and in consultation with Wellington Shire Council.

4.2.4 State Environmental Planning Policy

State Environmental Planning Policies (SEPP) deal with issues significant to the state, and cover various topics including affordable housing, environmental considerations, advertising and signage, caravan parks, open space, and development standards. The SEPP also consider a number of site-specific policies for designated areas. There are four key SEPP which relate to the proposed development and will be contemplated as part of the EA. These include:

- SEPP (Major Development) 2005;
- SEPP (Rural Lands) 2008;
- SEPP (Infrastructure) 2007; and
- SEPP No 1 Development Standards.

The *SEPP (Major Development) 2005* corresponds with the EP&A Act 1979 in the determination of the proposed Bodangora Wind Farm as a major development and 'critical infrastructure'.

4.2.5 Roads Act 1993

Permits may be required under Section 138 of the *Roads Act 1993* for underground cabling that would pass underneath local roads nearby and within the project site. Consultation will occur with the Roads and Traffic Authority and the Wellington Council in regards to all proposed road construction and required approvals.

4.3 Local Instruments

4.3.1 Wellington Local Environmental Plan 1995

The Wellington Local Environmental Plan provides for the control of land uses and a framework to support assessment across the Wellington Shire Council area.

The project site is located within the Wellington Local Environmental Plan (LEP) within the 1(a) Rural Zone. The development of a 'wind farm' is not a prohibited development, but does require planning consent.

The following are considered as relevant objectives affecting development within the Wellington Shire Council as a whole:

- (a) **COMMERCE—to contribute to the continued economic productivity and further development of the Wellington Council area,**
- (b) **AGRICULTURE—to support and maintain the continued viability of agricultural development in rural areas by protecting or preserving prime crop and pasture land, and by encouraging diversity within the industry,**
- (c) **TRANSPORT—to maintain the arterial road system and railway and airport to provide an efficient traffic network for the movement of goods and people,**
- (i) **SCENIC PROTECTION—to promote a high standard of visual amenity in all of the Wellington Council area by imposing environmental controls,**
- (j) **CONSERVATION—to recognise the value of heritage items and natural elements of the environment and to protect the environment from degradation by unnecessary demolition or unsympathetic development, and**
- (k) **RESIDENTIAL—to ensure that the range of densities and development permissible in residential areas, including villages, is compatible with the residential and rural environment and that the housing needs of the community are met within these constraints.**

Generally, the proposed development will provide for a source of income for those land owners, and additional local employment opportunities which will have spin-off effects for the local community. The proposed development will not prejudice the extent of primary production opportunities presented by the land.

Visual, environmental and land use investigations are proposed as part of the EA to determine the impact to:

- scenic vistas within and surrounding the project area,
- conservation values including both heritage and flora and fauna, and
- harmonise with the amenity of the living environments of the existing dwellings in the locality.

The objectives of the Rural (1A) Zone include the following:

- (a) to enable the continuation of traditional forms of rural land use and occupation,**
- (b) to maintain land having potential for agricultural production in units which are suitable for a range and variety of agricultural land uses,**
- (c) to encourage other forms of development which are associated with rural activity, or which support the tourism objective listed in clause 3,**
- (d) to ensure that the type and intensity of development is appropriate in relation to the characteristics of the land, the rural environment and the costs of providing public services and amenities,**
- (e) to conserve prime crop and pasture land by ensuring that:**
 - (i) it is not used for non-agricultural purposes, and**
 - (ii) any allotment created for agricultural purposes is suitable for that purpose,**

The proposed development will not reduce the quality nor significantly alter the quantity of land which can be utilised for primary production purposes in the region. The turbines and access tracks will comprise only a small land area and the majority of the land parcels can be continued for primary production purposes.

- (f) to protect or conserve:**
 - (i) soil stability by controlling the location of development in accordance with soil capability,**
 - (ii) forests of commercial value for timber production,**
 - (iii) valuable deposits of mineral, coal, petroleum and extractive materials by controlling the location of development to enable efficient extraction of these deposits,**
 - (iv) vegetation in environmentally sensitive areas where the conservation of the vegetation is likely to reduce land degradation,**
 - (v) water resources for use in the public interest,**
 - (vi) areas of significance for nature conservation, including areas of rare plants, wetlands and significant habitat, and**
 - (vii) places and buildings of archaeological or heritage significance, including Aboriginal relics and places, and**
- (g) to facilitate farm adjustments.**

Appropriate investigations are proposed within the EA to ensure that the proposed development will not affect the soil stability in the area and for erosion risk to be managed. Assessments will be provided on both the value of mineral resources in the area, plus the quality of existing flora, fauna and heritage.

The site is not located within an Environmental Protection Area indicated by the Wellington Local Environmental Plan 1995.

Discussions have been held with the Wellington Shire Council as part of the preliminary consultation process, and Council will continue to be consulted throughout further design and environmental investigations of the project.

5.0 KEY ENVIRONMENTAL ISSUES AND PROPOSED INVESTIGATIONS

The key environmental issues of the proposed Bodangora Wind Farm and proposed detailed investigations are outlined below. A full investigation of environmental impacts will be assessed as part of the EA component of this project.

This section of the PEA has been structured to correlate between both the key environmental issues and the proposed investigations. The investigations are proposed to cover the project design, construction and operation stages of the wind farm.

5.1 Telecommunications

Preliminary telecommunications investigations have been undertaken within the project area by Laurie Derrick and Associates (2010). The majority of telecommunication infrastructure is located at the atop of Mount Bodangora, which is the highest point within the project. This consists of point-to-point instruments for both Very High Frequency (VHF) and Ultra High Frequency (UHF) and one Gigahertz frequencies across the wider area.

The telecommunications investigations will form a consideration in the selection of the final turbine layout.

The turbine envelope that has been provided in **Appendix C** indicates that turbines maybe located on and around Mt Bodangora. Consultation will occur with those agencies identified in Section 6.0 to ensure the safety and operation of all existing and proposed infrastructure at this location.

Telecommunications Investigations and Assessment:

Preliminary investigations for telecommunications have already occurred. Further consultation with those agencies with telecommunications equipment at Mt Bodangora will occur following preparation of the preliminary turbine layout.

5.2 Land Use

Given the small footprint that each wind turbine and its ancillary equipment will comprise once operational, it is unlikely that the proposed wind farm development will have a detrimental impact upon wider pastoral land uses within the project area.

Some site specific impact may occur for the properties on which turbines or turbine access roads are located, particularly during construction. Site specific impacts and loss of pastoral land will be taken into account during consultation with land owners and during the preparation of the Construction Management Plan.

Land Use Investigations and Assessment:

Provide further assessment of the quality of agricultural land at the project area, including a full assessment of the Wellington Local Environmental Plan, and land capability guidelines. Confirm turbine layout and determine minimal reduction in agricultural land.

5.3 Flora and Fauna

Kevin Mills and Associates have been engaged to undertake a comprehensive flora and fauna field survey for the project area. These field surveys have been brought forward to early October in order to cover the spring season. Follow-up field surveys will happen over the summer months, as will any targeted surveys if deemed necessary during the early field surveys. A preliminary desktop assessment has been undertaken (utilising the EPBC and NSW Parks and Wildlife Service Atlas) and the results indicated the potential for several threatened species and habitats to occur within the project area. This search has been provided in **Appendix E**. The detailed flora and fauna investigations will reference the relevant matters under the *Environment Protection Conservation and Biodiversity Act (EPBC) 1999*, as well as the *Threatened Species Conservation Act 1995*.

According to the desktop results, it appears the matters of Environmental Significance that may occur within the project boundary are; natural grasslands on basalt and fine-textured alluvial plains, and the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland – both classified as critically endangered ecological communities.

Vulnerable species which are may be identified within the project area include the *Leipoa ocellata* (Malleefowl), the *Polytelis swainsonii* (Superb Parrot), as well as the *Philotheca ericifolia* (plant species). In addition, a number of migratory bird species or breeding locations may occur or are likely to occur within the project area. Mammals including *Chalinolobus dwyeri* (large-eared pied bat) and the *Nyctophilus timoriensis* (greater long-eared bat) are vulnerable and may occur within the area, as with *Pteropus poliocephalus* (grey-headed flying fox) and the *Dasyurus maculatus maculatus* (spot-tailed quoll).

Any listed matters of significance may be considered in accordance with a bilateral agreement between the Commonwealth Government and the State Government. Specialist advice will be sought in this instance.

Flora and Fauna Investigations and Assessment:

Desktop and field investigations are currently being undertaken and will determine the existence of protected and locally vulnerable species at the site. Those areas of identified vegetation and fauna habitat will be avoided in the preliminary layout and siting of the turbines. Once a preliminary turbine layout is determined, further investigations will determine the exact impact of the proposed development and any mitigation measures as necessary.

5.4 Heritage

NSW Archaeology Pty Ltd has been engaged for the purposes of undertaking a comprehensive culture and heritage survey. This will involve extensive consultation with various stakeholders to determine if there is likely to be any Aboriginal or early European heritage areas of significance within the project area.

Careful placement of the wind turbine locations will ensure that the locations of wind turbines do not materially affect any identified cultural heritage items or places, and that the historical environment will not be impacted by the proposed wind farm development as a whole.

Indigenous Heritage

The project will aim to achieve effective consultation with Aboriginal stakeholders during both preliminary assessment and once a preliminary turbine layout has been prepared. If any areas or items of Aboriginal significance are identified, then the assessment will provide an indication of the nature and extent of those items, actions to avoid any effects, and the long term management recommendations for those items.

Written notification of the project was provided in the local paper (Wellington Times) requesting any persons/groups with an interest over the land to identify themselves. Further, initial correspondence with the Department of Environment, Climate Change and Water has revealed five groups who may have an interest in the development. During preliminary consultation with the Wellington Shire Council, it was indicated that they support the Wellington Aboriginal Community Working Party as the peak governance body for the Aboriginal community in the Wellington area.

Further, preliminary advice from the National Native Title Tribunal has indicated that a Native Title claim exists over the project area by the Wellington Wiradjuri People.

European Heritage

A preliminary review has been undertaken via a search of the Australian Heritage Places Inventory has identified that two State Heritage Items are located in proximity of the project, being the following:

- Bodangora Gold Mine Former Remains (Chimney, Shaft and Engine Footings), located at Dick Street, Bodangora and located on Allotments 12, 14, 15 and 17; and
- St Paul's Catholic Church (a Federation style gothic church), located on Allotments 92 and 93 within the historic township of Bodangora.

These State Heritage Items have been shown on the map at **Appendix B**.

Both heritage items are located within the Bodangora Village and the material value of those places is not expected to be affected by the proposed development. A further review of European Heritage Items in the locality will occur and the wind turbine layout will be designed accordingly to mitigate any potential effects which may occur.

Heritage Investigations and Assessment:

Desktop and field investigations and consultation with relevant parties will determine the extent of any heritage items at the site to be avoided in the preparation of the preliminary turbine layout. An assessment will be provided on the effect of the proposed wind farm against the preliminary turbine layout and any mitigation measures required.

5.5 Visual/Landscape

The project area is located in a series of elevated ridges and will be visible from certain vantage points in the Bodangora area. Given the location of the project there will only be a very few neighbouring dwellings where the turbines will be visible.

Land to the north and west of the project areas is generally cleared and flat in nature, therefore the wind turbines will be more likely to be visible from these approaches. The wind farm is likely to be less visible from land to the south of the project area given the greater variation of topography of this area. The existence of roadside vegetation along main roads including Goolma Road in the eastern portion of the project area will partially obscure views of the turbines.

The project area is not visible from the township of Wellington as the township is located within a valley. The western-most turbines are likely to be visible from the settlement at Bodangora. Certain turbines will be visible from the Mitchell Highway between Dubbo and Wellington.

Once a preliminary turbine layout has been prepared, the visual assessment will be undertaken and include landscape analysis, view field identification and photomontages. The results of these studies will be considered when preparing the final layout.

Landscape and Visual Impact Investigations and Assessment:

A visual impact assessment will provide a landscape analysis, view field identification and photo montages of the preliminary turbine layout. A visual impact assessment from the location of the closest rural neighbours will be undertaken. These assessments will be based upon the preliminary turbine layout. Changes to the turbine layout will be made as required to reduce the visual impact of the turbines.

5.6 Shadow Flicker

Shadow flicker is caused by the shadow of the rotating turbine blades behind the sun.

The incidence of shadow flicker is dependent on the height of the turbines and the relative locations of the sun throughout the year. The exact turbine location, turbine height, rotor diameter and rotational speed of each turbine all influence the amount of shadow flicker. Shadow Flicker will be mitigated when preparing the turbine layout.

Shadow Flicker Investigations and Assessment:

Shadow flicker will be modelled on the preliminary turbine layout and will provide an assessment on those dwellings identified within and surrounding the project area. Estimates for the annual hours of the worst case scenario of shadow flicker received at each dwelling in the locality will be calculated, and amendments to the turbine layout implemented if required.

5.7 Blade Glint

Blade glint is caused by the reflection of sun from the rotating turbines. Blade glint is unlikely to occur in the Bodangora project.

Blade Glint Investigations and Assessment:

An assessment of the effect of blade glint on the surrounding locality will have particular regard to dwellings in the locality and main roads throughout the district. The effect will be considered according to the preliminary turbine layout and any amendments to the layout implemented if deemed necessary.

5.8 Noise

The impact of noise from the wind turbines is often perceived as a key issue for landowners and rural neighbours. The majority of noise generated from wind turbines is an aerodynamic noise caused by the rotating blades. In modern turbines there is very minimal mechanical noise.

The NSW Government refers often to the South Australian Environmental Protection Authority's *Environmental Protection (Noise) Policy* (2007). It is likely that this policy will provide a guideline for a noise assessment of the proposed wind farm.

In addition, the SA EPA has a *Wind Farms Environmental Noise Guidelines* (2009) which provides advice to proponents and acoustic engineers for the unique noise generated by wind farms. These guidelines will be utilised by the acoustic engineer when an assessment is undertaken, subject to the preliminary turbine arrangement.

The noise assessment will be in relation to noise generated by the wind turbines, as well as by other electrical infrastructure. Assessment will include monitoring of existing background noise at neighbouring receptors at different atmospheric conditions, followed by an analysis to see what increase the turbines have on the background noise.

Acoustic Impact Investigations and Assessment:

Background noise will be monitored, and the any potential noise impacts of the turbines modelled to inform the preliminary turbine layout mitigating any noise effect on sensitive receivers. The modelling will be based on the SA EPA Wind Farms Environmental Noise Guidelines 2003 being the adopted assessment procedure in NSW, however consideration will be given to the updated July 2009 Guidelines (yet to be adopted for assessment in NSW). Modifications to the turbine layout and mitigation measures to residences may be required depending on the results.

5.9 Aircraft Safety

The proposed wind farm would result in the development of a number of tall structures which may pose a risk to the nearby Wellington Airfield, located approximately 3.0 kilometres from the western border of the project area. As the runway is north-south, and the turbines are located to the east of the airfield, no significant issues are expected.

The Wellington Airfield opened in 2006 and is owned by the Wellington Shire Council. The Wellington Airfield is not an airfield which is registered with the Civil Aviation Safety Authority; and responsibility lies with the Air Operator's Certificate holder.

The proposed consultation process as part of the Environmental Assessment will include consultation with the Civil Aviation Safety Authority and Wellington Council as the owner of the Wellington Airfield. Air Services Australia, the RAAF and the Aerial Agricultural Association of Australia will also be informed and consulted.

Aircraft Safety Investigations and Assessment:

Consultation will be provided with the relevant stakeholders to determine the impact of the wind farm by undertaking an airfield risk assessment.

Aircraft safety will be considered and determination of any modifications to the preliminary turbine layout as required.

5.10 Geology

The project area largely comprises ancient fractured rocks, both igneous and sedimentary (Central West Catchment Management Authority, 2010). An assessment will be undertaken to ensure the structural integrity of the wind turbines and to determine required footings. As indicated in Section 2.0, it is likely that rock anchors will be used given the rocky outcrops located at the majority of topological crests.

The project site is not immune to the prospects of mineral resources in the local area, given the original settlement at Bodangora due to the purposes of mining. Information regarding any mining tenements in the local area is to be sought and considered as part of the EA. Any issues associated with the mineral resources of the region will be considered as part of ongoing consultation with the mining tenement owners and the Mineral Resources Division of the Department of Primary Industries. Consultation will also occur with those companies of which the mining tenements are held.

Geological Investigations and Assessment:

An assessment on the geological features of the site will be undertaken to ensure the structural integrity of each wind turbine.

5.11 Water Supply and Site Drainage

It is likely that small quantities of water will be required for the construction phase of the development for the purposes of wetting exposed soils and stockpiling to reduce the risk of erosion and sediment movement.

Water will be provided from the Wellington Shire Council, and will most likely be trucked to the site as and when required. The EA will consider the volumes of water necessary for this purpose, and whether any water licensing is required. On site water supplies may also be used where possible and appropriate.

Given the small footprint of each turbine, it is unlikely that the operation of the wind farm will cause an effect to the site drainage within the local area. However, construction will be designed to mitigate any possible impacts to site drainage within the local area. A detailed Construction Environmental Management and Mitigation Plan will be prepared as part of the Environmental Assessment.

Based on the nature of the development and the controls to be implemented, it is not likely that drainage will be impacted by the development.

Water Supply and Site Drainage Investigations and Assessment:

A review of necessary licensing amendments for water supply will be undertaken in consultation with the Wellington Shire Council. An assessment of any potential impacts of the project on the drainage, and mitigation and management of any possible impacts will be provided.

5.12 Traffic and Transport Assessment

Access routes will be selected to minimise disruption to local traffic and on-site environmental impacts. Preliminary transport options have been identified earlier within this PEA (Section 2.3) a number of local access roads may need to be used to enable turbine construction and regular site access. The location of these will be considered as part of a Traffic Management Plan that will be developed as part of the EA, and will consider the impact of construction and operational traffic, plus potential mitigation and management measures.

The design of upgraded roadways will consider the location of creeks and existing bridges and identify the need for any upgrading.

Traffic and Transport Investigations and Assessment:

A Traffic Management Plan will be prepared to identify the most efficient access routes to and at the site, particularly for construction purposes and for oversize vehicles. This plan will be developed in consultation with surrounding Councils. The location of local access roads will be dependent upon the preliminary turbine layout. The assessment will provide for management and mitigation techniques to reduce the impact of traffic movement to and from the site.

5.13 Bush Fire

It is unlikely but nevertheless possible that equipment faults could cause a fire at the site. Infigen Energy will maintain some capacity for controlling small grass fires should they occur at the subject site, in addition to some capacity in assisting authorities in fighting large fires. Consultation with the NSW Rural Fire Service will assist in determining operational procedures for the event of a bush fire at the site.

Bush Fire Investigations and Assessment:

A review of the likely fire hazards at the wind farm will be undertaken and consultation with the NSW Rural Fire Service will provide for operational procedures in the event of a bush fire.

6.0 CONSULTATION

Stakeholder and community consultation is a critical element in the assessment of major projects under Part 3A of the *Environmental and Planning Assessment Act 1979*.

The Bodangora project is aiming to achieve a consultation approach which is transparent, effective and thorough. The following outlines the consultation which has been undertaken to date, and the consultation which is proposed in the near future.

6.1 Land Owners

The current landowners were identified from the results of some high resolution mesoscale wind modelling. Leasing arrangements have been established between Infigen Energy with the greater majority of those land owners. Currently, a total of six land owners have been identified and consulted with. The landowners are well informed and supportive of the project.

6.2 Preliminary Consultation Already Undertaken

The proponent has undertaken preliminary consultation prior to the preparation of this Preliminary EA. This has included discussions with the Department of Planning, in order to confirm assessment as per Part 3A of the *Environmental and Planning Assessment Act 1979*, to determine project timelines and determine likely environmental investigations.

Discussions have also been undertaken with the Wellington Shire Council in order to introduce and provide an overview of project, outline proposed consultation and approvals process, discuss any preliminary concerns, identify local knowledge and issues for consideration, and to address questions as raised.

Key issues and considerations have been identified throughout the preliminary consultation, and will need to be addressed through further environmental investigations and design process for the wind turbine layout. This includes the following considerations:

- importance of an upfront, thorough and transparent consultation process with rural neighbours and the wider community;
- a community information session to be held prior to the lodgement of the Environmental Assessment (in addition to those community consultation requirements of a Major Project);
- ensuring the opportunity for local employment for construction purposes as far as possible; and
- the use of local materials.

Preliminary consultation has also occurred with the following parties and information has been provided into the relevant sections of this PEA:

- Transgrid: for the purposes of electrical connections (Section 2.2) ;and
- Preliminary consultation with Aboriginal stakeholders that have a direct connection with that region (Section 5.4).

6.3 Proposed Consultation Process

Agency consultation will occur as per the requirements prepared by the Director General. Consultation will specifically address the nature of the proposal and the extent of its potential environmental, social or economic impacts. At minimum, the following agencies/groups have been identified to achieve an adequate and appropriate methodology for consultation:

- land owners;
- the local community including neighbouring residences;
- Wellington Shire Council (including for the purposes of water provision to the project area, local roads, and as representative of the local community);
- Mid Western Regional Council;
- Warrumbungle Shire Council;
- Dubbo City Council;
- Department of Environment and Climate Change;
- Department of Water and Energy;
- Department of Primary Industries;
- NSW Roads and Traffic Authority;
- NSW Rural Fire Service;
- Wellington Valley Wiradjuri Aboriginal Corporation;
- Gallangabang Aboriginal Corporation;
- Wellington Aboriginal Community Working Party;
- other traditional land owners and persons with interest over the land as identified;
- Central West Catchment Management Authority;
- Civil Aviation Safety Authority;
- Airservices Australia;
- Aerial Agricultural Society of Australia;
- Local Aeronautical Club;
- TransGrid;

- Soul Pattinson Telecommunications^{1*};
- Country Energy*;
- ACTV*;
- any companies with mineral exploration licences over the project site (to be confirmed during EA); and
- Bodangora Landcare group (although currently inactive there is still a contact person).

Over the next few months, the proponent will offer to meet with all neighbours in the Bodangora locality. This is to make them aware of the project, and to provide an opportunity to ask any questions and make any comments on the proposed project.

Prior to the lodgement of the EA, the proponent will host a community information session within the Wellington Shire for the purposes of providing information to the local community and enabling an opportunity for feedback. It is likely that this session will occur around April/May 2011.

Public exhibition will occur for a period of 30 days. An open day will be held during this time to allow an additional opportunity for any members of the public to be consulted and their views considered in the assessment process.

Following agency and public consultation, a report will be prepared to document the issues identified and appropriate responses which were undertaken. This report will include a summary of the findings, an outline of the process undertaken, and analysis of the issues raised and by whom and how each issue is proposed to be addressed within the Environmental Assessment.

^{1*} As operators of equipment at Mount Bodangora.

7.0 **REFERENCES**

Central West Catchment Management Authority, 2010. *Land*. NSW Government. Available online <<http://cw.cma.nsw.gov.au/OurNaturalAssets/land.html>>

Department of Resources, Energy and Tourism, 2010. *Australian Energy Resource Assessment*. Australian Government. Geoscience Australia. Australian Bureau of Agricultural and Resource Economics (ABARE). Available online <http://www.energymatters.com.au/index.php?main_page=news_article&article_id=798>

Department of Environment, Climate Change and Water, 2005. *The Greenhouse Plan*. New South Wales Government. The Cabinet Office of the Government of New South Wales. Available online <www.greenhouseinfo.nsw.gov.au>.

APPENDIX A

Director General's Confirmation of Part 3A Major Project



Planning

Contact: Anna Timbrell
Phone: (02) 9228 6345
Fax: (02) 9228 6455
Email: Anna.Timbrell@planning.nsw.gov.au

Mr Frank Boland
Infigen Energy
Level 22
56 Pitt Street
SYDNEY NSW 2000

Our ref.: 10/17452

Dear Mr Boland

Subject: Bodangora Wind Farm (MP 10_0157)

I refer to your correspondence dated 20 August 2010 seeking confirmation that the above proposal is a project to which Part 3A of the *Environmental Planning and Assessment Act 1979* (the Act) applies.

On 30 August, the Director – Infrastructure Projects, as delegate for the Minister, formed the opinion under clause 6 of the *State Environmental Planning Policy (Major Development) 2005* (the Major Development SEPP) that the above proposal is development of a kind that is described in Schedule 1 of the Major Development SEPP.

Section 75E of the Act requires you to lodge an application for your project with the Director-General. The application must include a completed application form (available at http://www.planning.nsw.gov.au/assessingdev/pdf/part3a_applicationform.pdf) and a Preliminary Environmental Assessment. Please include both hard and electronic copies of each of these documents.

The Major Project Application Number for this project is MP 10_0157. Please use this number in all correspondence with the Department. Your contact officer for this proposal, Anna Timbrell, can be contacted on (02) 9228 6345 or via email at Anna.Timbrell@planning.nsw.gov.au. Please mark all correspondence regarding the proposal to the attention of the contact officer.

Yours sincerely,

Daniel Keary
Director – Infrastructure Projects



Planning

Record of Minister's opinion for the purposes of Clause 6(1) of State Environmental Planning Policy (Major Development) 2005

As delegate of the Minister for Planning under delegation executed on 25 January 2010, I have formed the opinion that the development described in the Schedule below is development of a kind that is described in Schedule 1, Group 8, clause 24 of the *State Environmental Planning Policy (Major Development) 2005* – namely development for the purpose of a wind electricity generation facility that has a capital investment value of more than \$30 million – and is thus declared to be a project to which Part 3A of the *Environmental Planning and Assessment Act 1979* applies for the purpose of section 75B of that Act.

Schedule

A proposal for the Bodangora Wind Farm, a wind electricity generating facility and associated infrastructure located within the Wellington local government area, comprising up to 30 turbines, as generally described in a letter dated 20 August 2010 from Infigen Energy Limited to the Department of Planning.

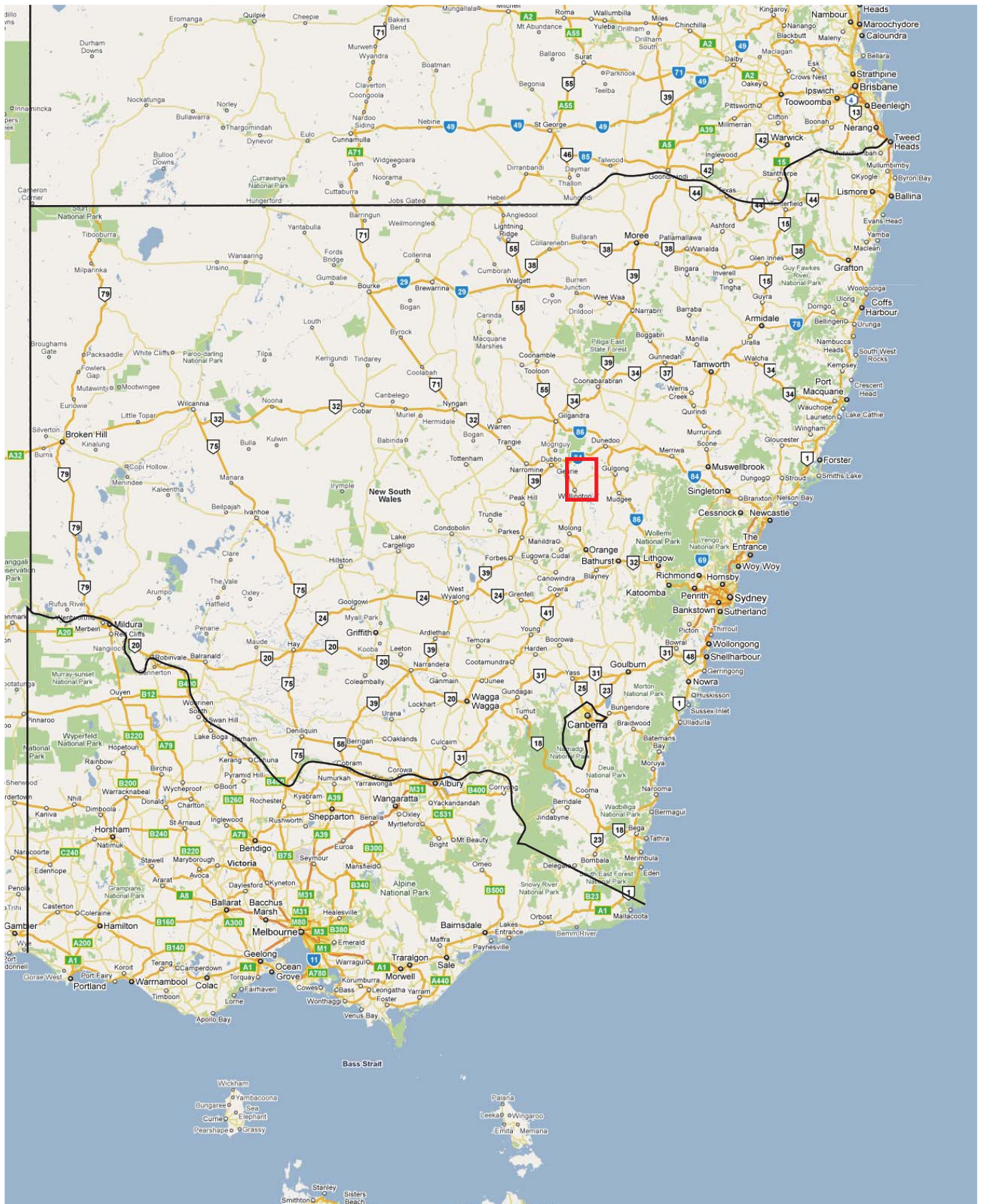
Daniel Keary

Director, Infrastructure Projects

Date: 30 AUGUST 2010

APPENDIX B

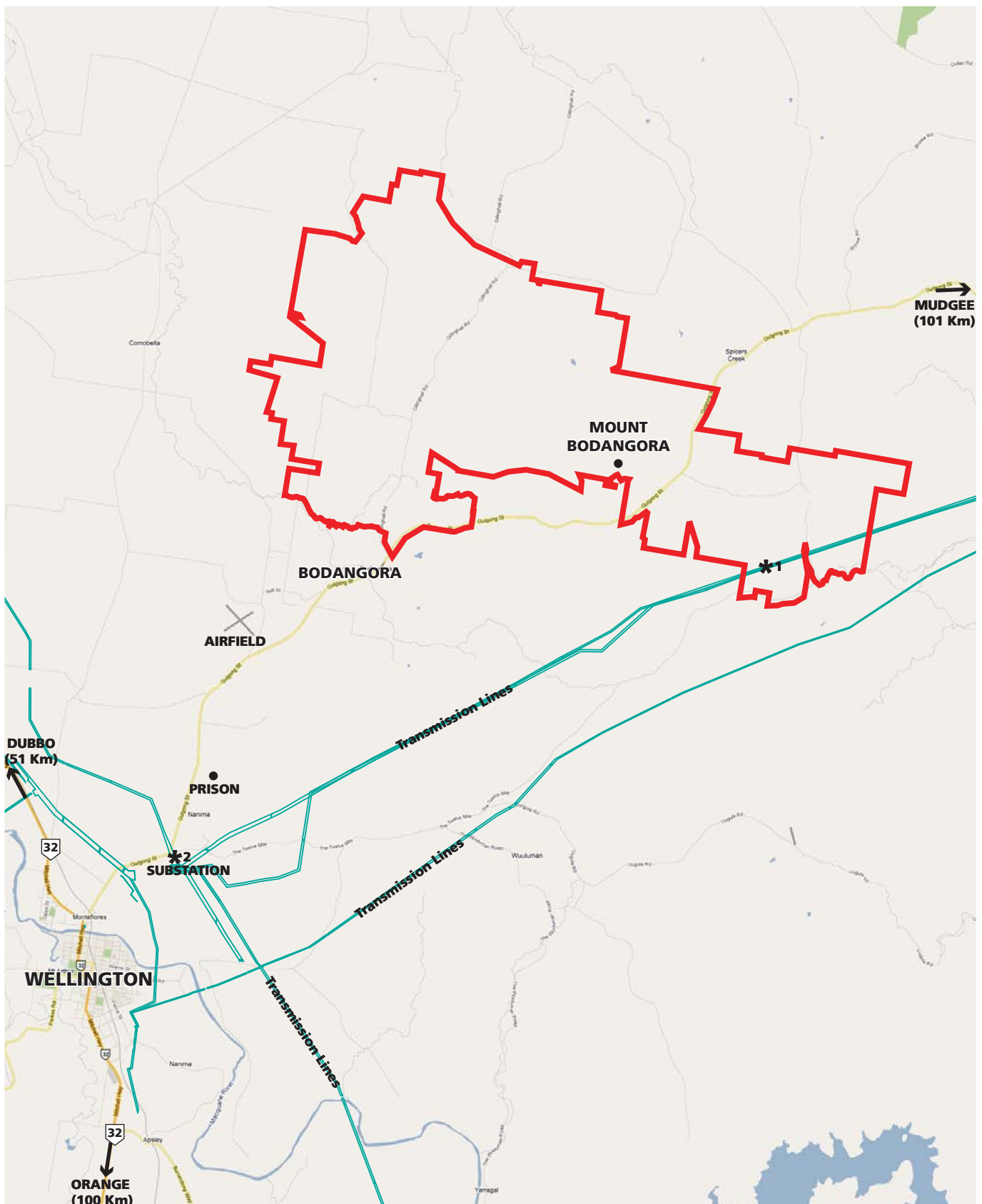
Site Locality



Project Site Area

Project Locality Plan





 Project Site Boundary

*1
*2 Grid Connection Option

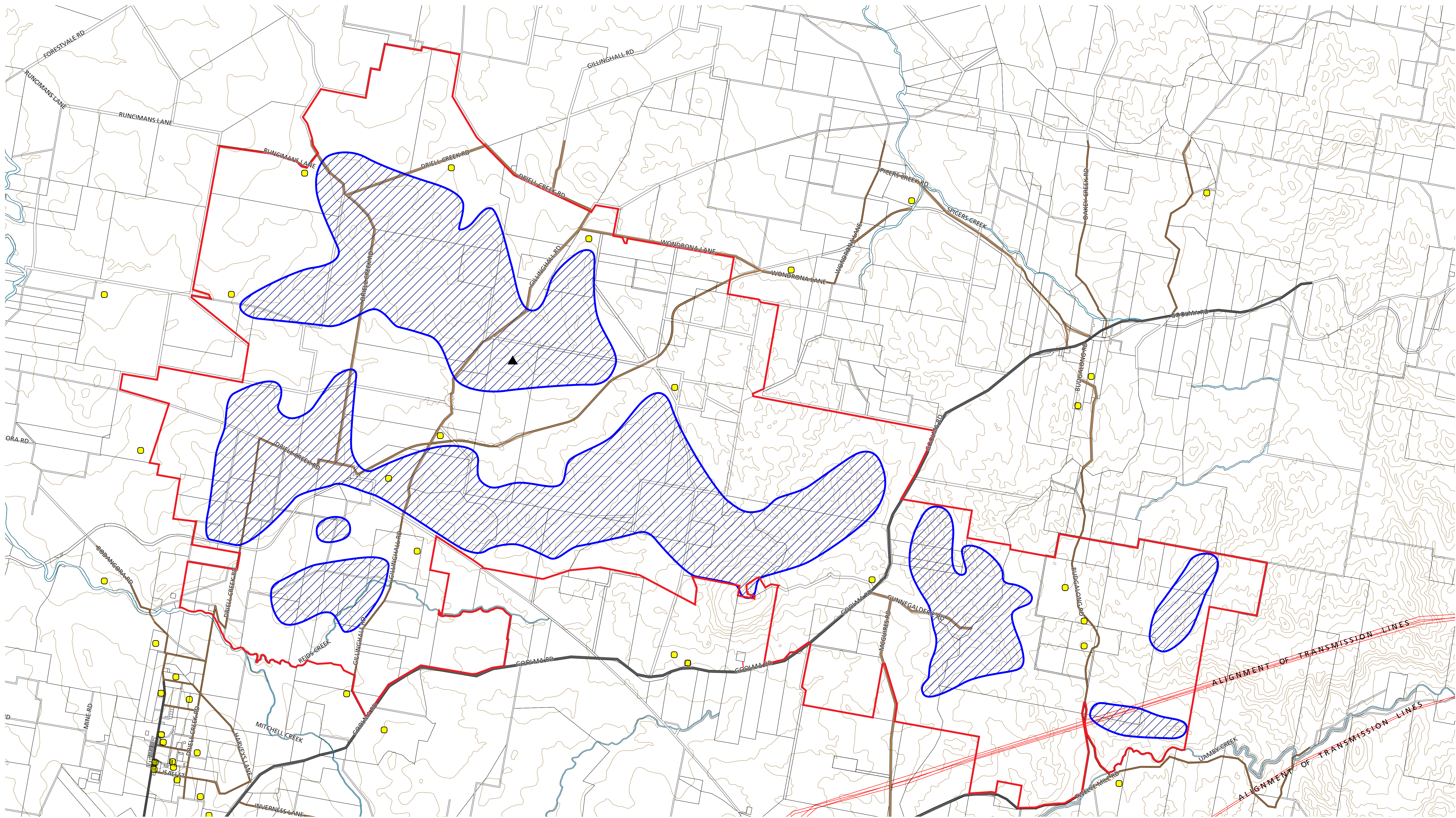


0 5km

Detailed Locality Plan

APPENDIX C

Turbine Envelope

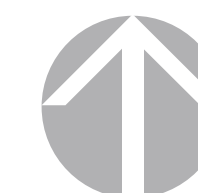


- Subject Site
- Turbine Envelopes
- Dwelling Locations
- Watercourses
- Contours @ 20m intervals
- Sealed Roads
- Unsealed Roads
- Metmast

Site Plan

Turbine Envelopes

BODANGORA



APPENDIX D

Land ownership map

APPENDIX E

Environment Protection and Biodiversity Conservation Act Database Search

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Protected Matters Search Tool

You are here: [Environment Home](#) > [EPBC Act](#) > [Search](#)

28 July 2010 17:03

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Information on the coverage of this report and qualifications on data supporting this report are contained in the [caveat](#) at the end of the report.

You may wish to print this report for reference before moving to other pages or websites.

The Australian Natural Resources Atlas at <http://www.environment.gov.au/atlas> may provide further environmental information relevant to your selected area. Information about the EPBC Act including significance guidelines, forms and application process details can be found at <http://www.environment.gov.au/epbc/assessmentsapprovals/index.html>



This map may contain data which are
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© PSMA Australia Limited

Search Type: Area
Buffer: 0 km
Coordinates: -32.32248,149.00464, -32.48368,149.00464, -32.48368,149.18630, -32.32248,149.18630



- Report Contents:** [Summary](#)
[Details](#)
• [Matters of NES](#)
• [Other matters protected by the EPBC Act](#)
• [Extra Information](#)
[Caveat](#)
[Acknowledgments](#)

Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see <http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html>.

World Heritage Properties:	None
National Heritage Places:	None
<u>Wetlands of International Significance:</u> (Ramsar Sites)	1
Commonwealth Marine Areas:	None
<u>Threatened Ecological Communities:</u>	4
<u>Threatened Species:</u>	12
<u>Migratory Species:</u>	13

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place and the heritage values of a place on the Register of the National Estate. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage/index.html>.

Please note that the current dataset on Commonwealth land is not complete. Further information on Commonwealth land would need to be obtained from relevant sources including Commonwealth agencies, local agencies, and land tenure maps.

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at <http://www.environment.gov.au/epbc/permits/index.html>.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None

Places on the RNE:	None
Listed Marine Species:	10
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	None
Other Commonwealth Reserves:	None
Regional Forest Agreements:	None

Details

Matters of National Environmental Significance

Wetlands of International Significance [Dataset Information] (Ramsar Sites)		
MACQUARIE MARSHES NATURE RESERVE	Within same catchment as Ramsar site	
Threatened Ecological Communities [Dataset Information]	Status	Type of Presence
Grey Box (<i>Eucalyptus microcarpa</i>) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community may occur within area
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically Endangered	Community may occur within area
Weeping Myall Woodlands	Endangered	Community may occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area
Threatened Species [Dataset Information]	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater	Endangered	Species or species habitat likely to occur within area
Lathamus discolor Swift Parrot	Endangered	Species or species habitat likely to occur within area
Leipoa ocellata Malleefowl	Vulnerable	Species or species habitat likely to occur within area
Polytelis swainsonii	Vulnerable	Species or species habitat likely to occur

Superb Parrot		within area
Rostratula australis	Vulnerable	Species or species habitat may occur within area
Australian Painted Snipe		

Mammals

Chalinolobus dwyeri	Vulnerable	Species or species habitat may occur within area
Large-eared Pied Bat, Large Pied Bat		
Dasyurus maculatus maculatus (SE mainland population)	Endangered	Species or species habitat may occur within area
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population)		
Nyctophilus timoriensis (South-eastern form)	Vulnerable	Species or species habitat may occur within area
Greater Long-eared Bat, South-eastern Long-eared Bat		
Pteropus poliocephalus	Vulnerable	Species or species habitat may occur within area
Grey-headed Flying-fox		

Ray-finned fishes

Maccullochella peelii peelii	Vulnerable	Species or species habitat may occur within area
Murray Cod, Cod, Goodoo		

Plants

Philothea ericifolia	Vulnerable	Species or species habitat likely to occur within area
Tylophora linearis	Endangered	Species or species habitat may occur within area

Migratory Species [Dataset Information]	Status	Type of Presence
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Migratory Terrestrial Species

Birds

Haliaeetus leucogaster	Migratory	Species or species habitat likely to occur within area
White-bellied Sea-Eagle		
Hirundapus caudacutus	Migratory	Species or species habitat may occur within area
White-throated Needletail		
Leipoa ocellata	Migratory	Species or species habitat likely to occur within area
Malleefowl		
Merops ornatus	Migratory	Species or species habitat may occur within area
Rainbow Bee-eater		
Myiagra cyanoleuca	Migratory	Breeding likely to occur within area
Satin Flycatcher		
Xanthomyza phrygia	Migratory	Species or species habitat likely to occur within area
Regent Honeyeater		

Migratory Wetland Species

Birds

Ardea alba	Migratory	Species or species habitat may occur within area
Great Egret, White Egret		
Ardea ibis	Migratory	Species or species habitat may occur within area
Cattle Egret		

[*Gallinago hardwickii*](#)

Latham's Snipe, Japanese Snipe

Migratory Species or species habitat may occur within area

[*Rostratula benghalensis s. lat.*](#)

Painted Snipe

Migratory Species or species habitat may occur within area

Migratory Marine Birds

[*Apus pacificus*](#)

Fork-tailed Swift

Migratory Species or species habitat may occur within area

[*Ardea alba*](#)

Great Egret, White Egret

Migratory Species or species habitat may occur within area

[*Ardea ibis*](#)

Cattle Egret

Migratory Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species [Dataset Information]	Status	Type of Presence
Birds		
<i>Apus pacificus</i> Fork-tailed Swift	Listed - overfly marine area	Species or species habitat may occur within area
<i>Ardea alba</i> Great Egret, White Egret	Listed - overfly marine area	Species or species habitat may occur within area
<i>Ardea ibis</i> Cattle Egret	Listed - overfly marine area	Species or species habitat may occur within area
<i>Gallinago hardwickii</i> Latham's Snipe, Japanese Snipe	Listed - overfly marine area	Species or species habitat may occur within area
<i>Haliaeetus leucogaster</i> White-bellied Sea-Eagle	Listed	Species or species habitat likely to occur within area
<i>Hirundapus caudacutus</i> White-throated Needletail	Listed - overfly marine area	Species or species habitat may occur within area
<i>Lathamus discolor</i> Swift Parrot	Listed - overfly marine area	Species or species habitat likely to occur within area
<i>Merops ornatus</i> Rainbow Bee-eater	Listed - overfly marine area	Species or species habitat may occur within area

<i>Myiagra cyanoleuca</i> Satin Flycatcher	Listed - overfly marine area	Breeding likely to occur within area
<i>Rostratula benghalensis s. lat.</i> Painted Snipe	Listed - overfly marine area	Species or species habitat may occur within area

Caveat

The information presented in this report has been provided by a range of data sources as [acknowledged](#) at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the *Environment Protection and Biodiversity Conservation Act 1999*. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under "type of presence". For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the [migratory](#) and [marine](#) provisions of the Act have been mapped.

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as [extinct or considered as vagrants](#)
- some species and ecological communities that have only recently been listed
- [some terrestrial species](#) that overfly the Commonwealth marine area
- migratory species that are very [widespread, vagrant, or only occur in small numbers](#).

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites;
- seals which have only been mapped for breeding sites near the Australian continent.

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Acknowledgments

This database has been compiled from a range of data sources. The Department acknowledges the following custodians who have contributed valuable data and advice:

- [New South Wales National Parks and Wildlife Service](#)
- [Department of Sustainability and Environment, Victoria](#)
- [Department of Primary Industries, Water and Environment, Tasmania](#)
- [Department of Environment and Heritage, South Australia Planning SA](#)
- [Parks and Wildlife Commission of the Northern Territory](#)
- [Environmental Protection Agency, Queensland](#)
- [Birds Australia](#)
- [Australian Bird and Bat Banding Scheme](#)
- [Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [Queensland Herbarium](#)
- [National Herbarium of NSW](#)
- [Royal Botanic Gardens and National Herbarium of Victoria](#)
- [Tasmanian Herbarium](#)
- [State Herbarium of South Australia](#)
- [Northern Territory Herbarium](#)
- [Western Australian Herbarium](#)
- [Australian National Herbarium, Atherton and Canberra](#)
- [University of New England](#)
- Other groups and individuals

[ANUCLiM Version 1.8, Centre for Resource and Environmental Studies, Australian National University](#) was used extensively for the production of draft maps of species distribution. Environment Australia is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

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Last updated: Thursday, 20-Nov-2008 14:17:56 EST

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